Including the genera *Distemma*, *Rattulus*, *Furcularia*, and *Monocerca*, and a new genus,

Monommata, with a cylindrical body, a partially hardened skin, two long caudal points, and one cervical eye. Species *Notommata tigris* and *longiseta*, Ehr.

Fam. 4. **Scaridina**, Carus.

Foot long-jointed, frequently with long spines and points, not retractile; skin soft or hardened. Genera *Scaridium* and *Dinocharis*.

Fam. 5. **Philodinæa**, Ehr.

Body fusiform; foot retractile like a telescope, forked at the end; one cervical movable palpus. Genera: *Callidina*, *Philodina*, *Rotifer*, and *Actinurus*.

Fam. 6. **Loricata**, Bartsch.

(=*Brachionea*, Carus, =*Euchlanidota* and *Brachionæa*, Ehr.—*Dinocharis*.)

With a hard carapace sharply separated from the head and foot; soft parts retractile. Genera observed: *Euchlanis*, *Lepadella*, *Metopidia*, *Brachionus*, *Monostyla*, *Pterodina*, *Anuræa*, *Salpina*, and *Colurus*.

(Order) II. GASTERODELA.

Fam. 7. **Ascomorpha**, Perty.

Body short, cylindrical, truncated in front, rounded off behind; no intestine or anus; one cervical eye.

Under the genus *Ascomorpha* (Perty) the author describes a new species, which he calls *A. saltans*.—*Württemb. naturw. Jahreshefte*, xxvi. pp. 307–364.

On the Blood and Blood-corpuscles of Insects and some other Invertebrata. By Dr. V. Graber.

The blood-corpuscles of Insects and many other Arthropoda (*Epeira*, *Phalangium*, *Oniscus*, *Julus*, *Lithobius*) present extraordinary differences, especially with respect to their relative number, size, and form, even in one and the same individual. As regards form, they show all possible transitions, from a slender sigmoid or horseshoe-shaped spindle to biconvex or sometimes perfectly flat, thin, circular disks. Proteiform corpuscles also appear, although only exceptionally. Their size, or, more properly, the measurement of their longest diameter, is equally variable. It is usually from 0·008 to 0·02 millim., but also may be less (as in *Cossus ligniperda*), or it may attain the gigantic dimensions of 0·04 millim., or even more (in species of *Asilus*).

Many phenomena (for example, on the addition of water), however, indicate that the majority of the blood-corpuscles observed in the same specimen possess nearly the same volume, and that the various forms in which they appear are for the most part caused by the very narrow courses through which they have to pass in some places,

where, as is shown by observations on living Dipterous larvæ and other Arthropoda (*Oniscus*, *Epeira*), spontaneous obstructions sometimes occur in the movement of the corpuscles, and sometimes they stretch themselves to almost three times their ordinary length, and may also break up into fragments.

As regards the nature of the corpuscles in other respects, their behaviour with various fluids and also when frozen, heated, and electrified, it may be asserted with great probability that they cannot be perfectly identified with the well-known colourless formative constituents of the blood of the Vertebrata (with which they certainly have much in common), and still less with its coloured constituents. As a rule, no differentiation of their substance into a central structure (a nucleus) and a (cortical) layer surrounding it can be observed in the fresh blood-corpuscles; but the capability of such a differentiation must be ascribed to them on both chemical and purely physiological grounds. But the author could not detect any true cell-membrane (in Schwann's sense of the word), such as is almost universally ascribed to the blood-corpuscles of insects (as by Landois, Weissmann, and Gerstäcker) and other Invertebrata (as by Dr. Häckel in the crayfish).

It is especially characteristic of the blood-corpuscles of Insects, and probably of most Arthropoda (Crustacea according to E. Häckel), that a very variable number of small, frequently dust-like drops of an oleaginous fat are detected upon them. These appear of a more or less intense yellow, but sometimes (pupa of *Sphinx ligustri*) almost of a hyacinthine red colour, and appear to indicate a close relation between the blood-corpuscles and the *corpus adiposum* of these animals. The amount of fat in the blood, and especially in the formative constituents suspended therein, may in general determine the colour of the body-fluid to which the name of "blood" is given, and which in most cases is whitish, pale yellowish, or yellowish green. The last-named colour appears especially in decidedly phytophagous insects (Acridiidæ, many caterpillars, &c.). Sometimes, however, pigments in the serum, which may also be attached to the corpuscles in the form of little points, are to be regarded as the chief cause of the coloration of the blood of insects. Blood agreeing with that of the Vertebrata, both in its red colour and in the cause of the latter (Rollet), only occurs as an extraordinary rarity (larvæ of *Chironomus* &c.).

Beside fat, the substance of the blood seems principally to contain globuline (precipitable by CO^2). Both substances not unfrequently separate in the form of numerous fine acicular crystals, which are usually arranged radially around the central point of the corpuscle. It is less probable, on the contrary, that the contents of a blood-corpuscle become converted into a single crystal. The author found such simple crystals (8-, 4-, and 6-sided tables) similar in composition to snow-crystals.

The division of the blood-corpuscles, starting from the nucleus, observed by Landois in the larva of *Agrotis segetum*, and ascribed by him to the blood-corpuscles of insects in general, was not seen with

certainty by the author, although he made observations for hours together upon numerous insects.

Beside globuline, fibrine, and another proteine body, the author detected CaO, MgO, PO^5, and NaCl as inorganic constituents of the serum.

The author did not succeed in accurately ascertaining the chemical constitution of many crystals which occur in the evaporated serum; but he convinced himself that these are not, as affirmed by Landois, all of organic nature.

Those crystals which are undoubtedly of organic nature (many of them become carbonized when strongly heated) show on the whole so great an agreement, both crystallographically and in their solubility, that they must be referred, with great probability, to one and the same essential constituent of the blood. They cannot, however, be placed upon the same stage as the hæmoglobine crystals of the Vertebrata, not only on account of their colour, but also because they are for the most part either insoluble or difficultly soluble in aqueous ammonia.—*Anzeiger der K. K. Akad. der Wiss. in Wien*, Jan. 5, 1871, pp. 2–5.

On the Structure of the Renillæ. By A. Kölliker.

1. The *stem* of the *Renillæ* contains two canals, separated by a partition—a dorsal one and a ventral one, which coalesce into a single cavity at the free end of the stem, the partition ceasing with a sharp margin before the end of the stem.

2. The continuation of the stem into the disk (frond) or the *keel* contains in some species nothing but the dilated ends of the peduncular canals; but in other species there is, in addition, a central sinus-like space, which may even be imperfectly divided into two cavities by a vertical septum. This median sinus is completely closed; that is to say, it is destitute of large apertures of communication. On the other hand, such apertures occur in the dorsal and ventral sinuses of the keel (the continuations of the two peduncular canals), which, although they terminate cæcally, open into the neighbouring polyp-cells by a larger or smaller number of apertures.

3. The *stem* and *keel* are furnished with longitudinal and annular muscles, and possess wider nutritive canals than the other Pennatulidæ; from these, finer nutritive vessels, ultimately becoming very fine, are given off, and are particularly numerous in the cutis.

4. The *frond* or *disk* of *Renilla* consists of nothing but polyp-cells, to which the dorsal and ventral laminæ of the frond serve as roof and floor; they are separated in the interior by septa, which unite the two laminæ above mentioned. All these parts consist of connective tissue, with an abundance of fine and capillary nutritive vessels and more or less numerous calcareous corpuscles.

5. The *polyp-cells* are lozenge-shaped or fusiform in the direction of the radii of the frond, and are of the height of the distance between the dorsal and ventral laminæ of the frond. Nevertheless